The Requirements Generation Process
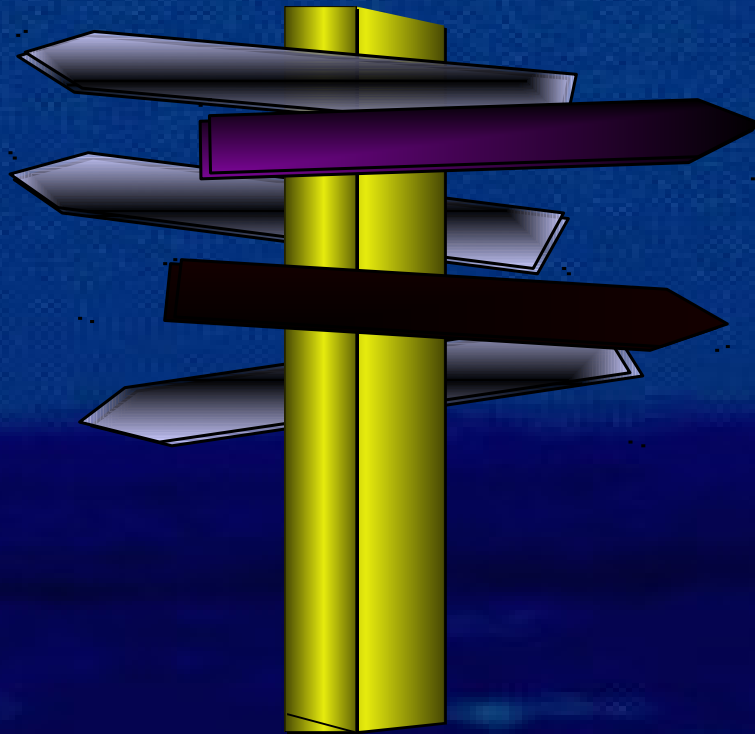
The Requirements Generation Process

"If you don't know where you are going, any road will take you there."
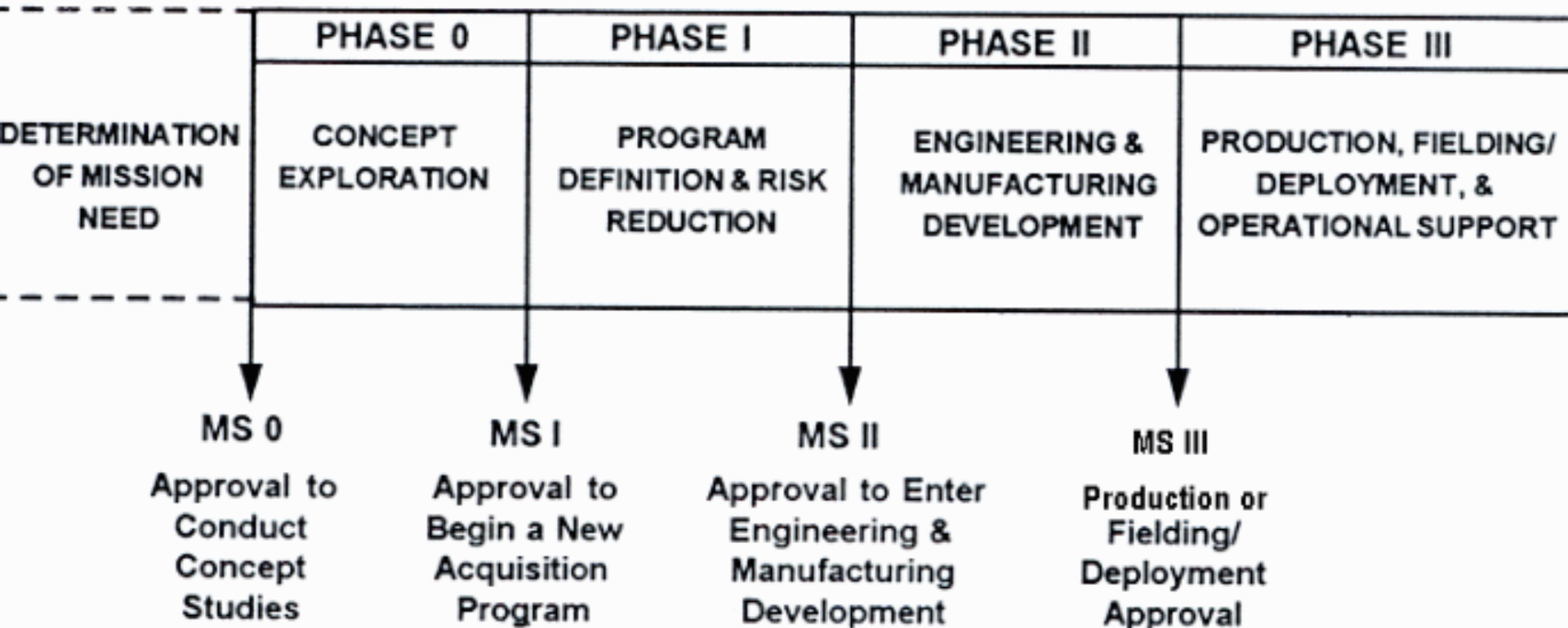
AFRC Role in Requirements Process

- **Primary Role is one of support to the "Lead Command" for weapons systems requirements process**
  - *Except WC-130, where AFRC is lead*
- **AFRC Requirements documented in the Long Range Compendium**
  - *Supplements the Total Force MAPs and MSPs*
  - *Assessment of active duty support to AFRC*
  - *Project investment profile requirements*

The Requirements Generation Process

- **Starts with a deficiency or opportunity**
  - *Requirements pull vs. technology push*
- **Any organization can start the process**
  - *Normally the user (ACC, AMC, AFRC, ANG, NGB, etc.)*
- **The challenge is to translate an idea into a program that is sufficiently articulated to allow a contractor to successfully execute**

ACQUISITION MILESTONES & PHASES

	PHASE 0	PHASE I	PHASE II	PHASE III
DETERMINATION OF MISSION NEED	CONCEPT EXPLORATION	PROGRAM DEFINITION & RISK REDUCTION	ENGINEERING & MANUFACTURING DEVELOPMENT	PRODUCTION, FIELDING/ DEPLOYMENT, & OPERATIONAL SUPPORT

MS 0

Approval to Conduct Concept Studies

MS I

Approval to Begin a New Acquisition Program

MS II

Approval to Enter Engineering & Manufacturing Development

MS III

Production or Fielding/ Deployment Approval

The number of phases and decision points shall be tailored to meet specific needs of PM.
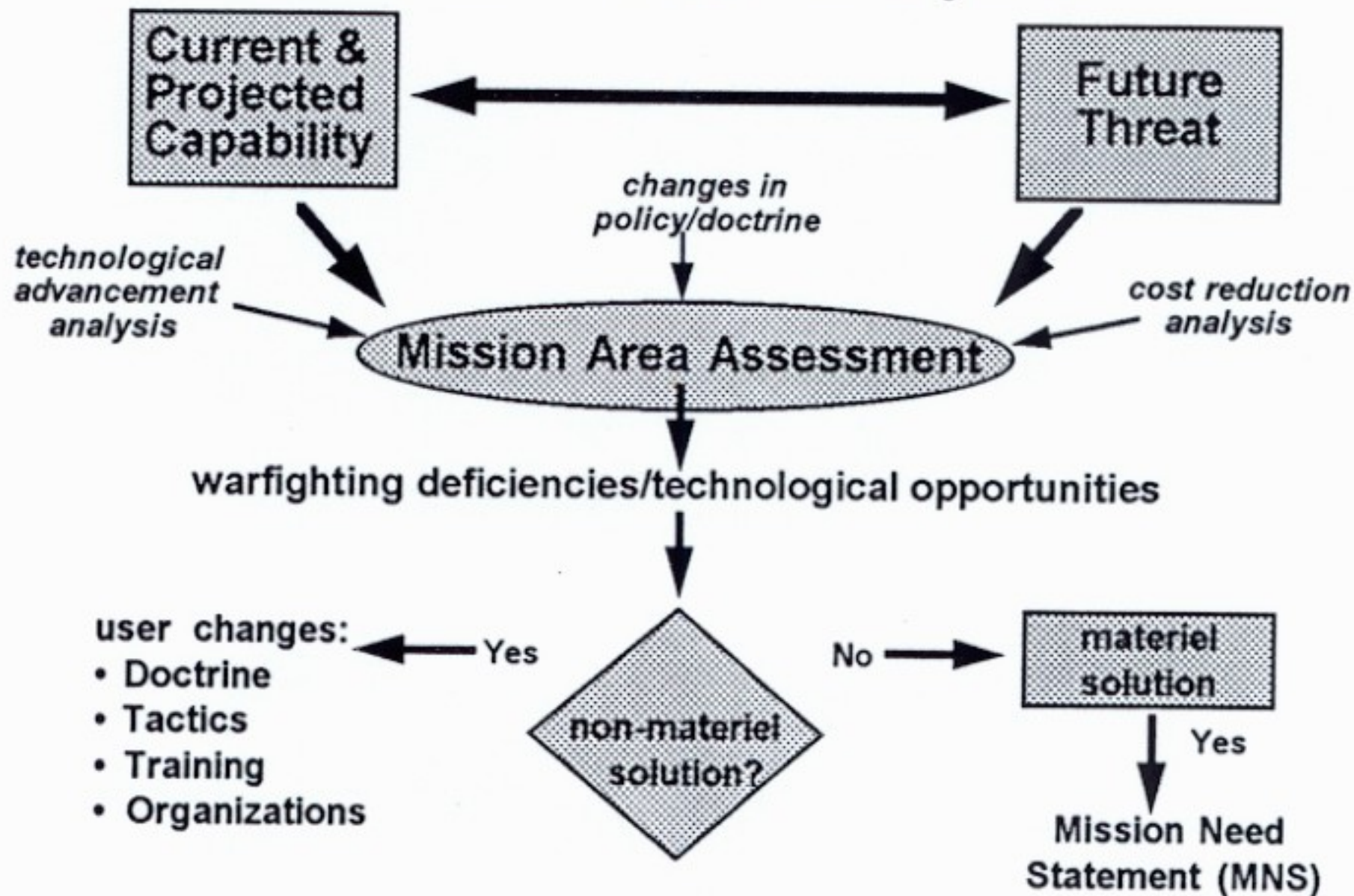
Mission Need

- **Mission Needs Statement**
  - *documents deficiency or opportunity requiring material solution (not tactics or doctrine)*
    - *Not system specific*
    - *Validated by independent authority (JROC, agency chief)*
  - *Prerequisite to enter Concept Exploration phase*

Supports Milestone 0

Mission Area Analysis

Current & Projected Capability ⟷ **Future Threat**

changes in policy/doctrine

technological advancement analysis

cost reduction analysis

Mission Area Assessment

warfighting deficiencies/technological opportunities

user changes:
- Doctrine
- Tactics
- Training
- Organizations

← Yes — **non-materiel solution?** — No → **materiel solution**

Yes → Mission Need Statement (MNS)

Acquisition Categories

Acquisition Category	Review, Designation Authority and MDA	FY 96 Dollars
ACAT ID	DAB, DAE	>$355M RDT&E >$2.1B Procurement
ACAT IC	Component service, SECAF or AFAE	>$355M RDT&E >$2.1B Procurement
ACAT II	Component service, SECAF or AFAE	$140M<RDT&E<$355M $645M<Proc<$2.1B
ACAT III	Lowest Level (designated by AFAE	Less than ACAT II

User Requirements Documents for DAB I,II,III

- **ORD -**
  - *includes Requirements Correlation Matrix*
    - *with thresholds and objectives*
- **Analysis of Alternatives (AoA)**
- **System Threat Analysis Report (STAR)**
  - *accompanies ORD*
  - *Documents threat to new system (done by Air Intelligence Agency, validated by DIA)*

Analysis of Alternatives

- **Compares advantages and disadvantages of alternatives**
- **Prepared before appropriate Milestone Reviews beginning with M/S 0**
  - *An independent assessment*
  - *Used to be called COEA*

Is the benefit worth the cost?

Operational Requirements Document (ORD)

- **Identifies the performance requirements necessary to meet an operational need**
  - *defines desired characteristics and capabilities*
  - *defines thresholds, objectives and key parameters*
    - *Requirements Correlation Matrix (RCM)*
  - *prepared in first phase (CE) of program*
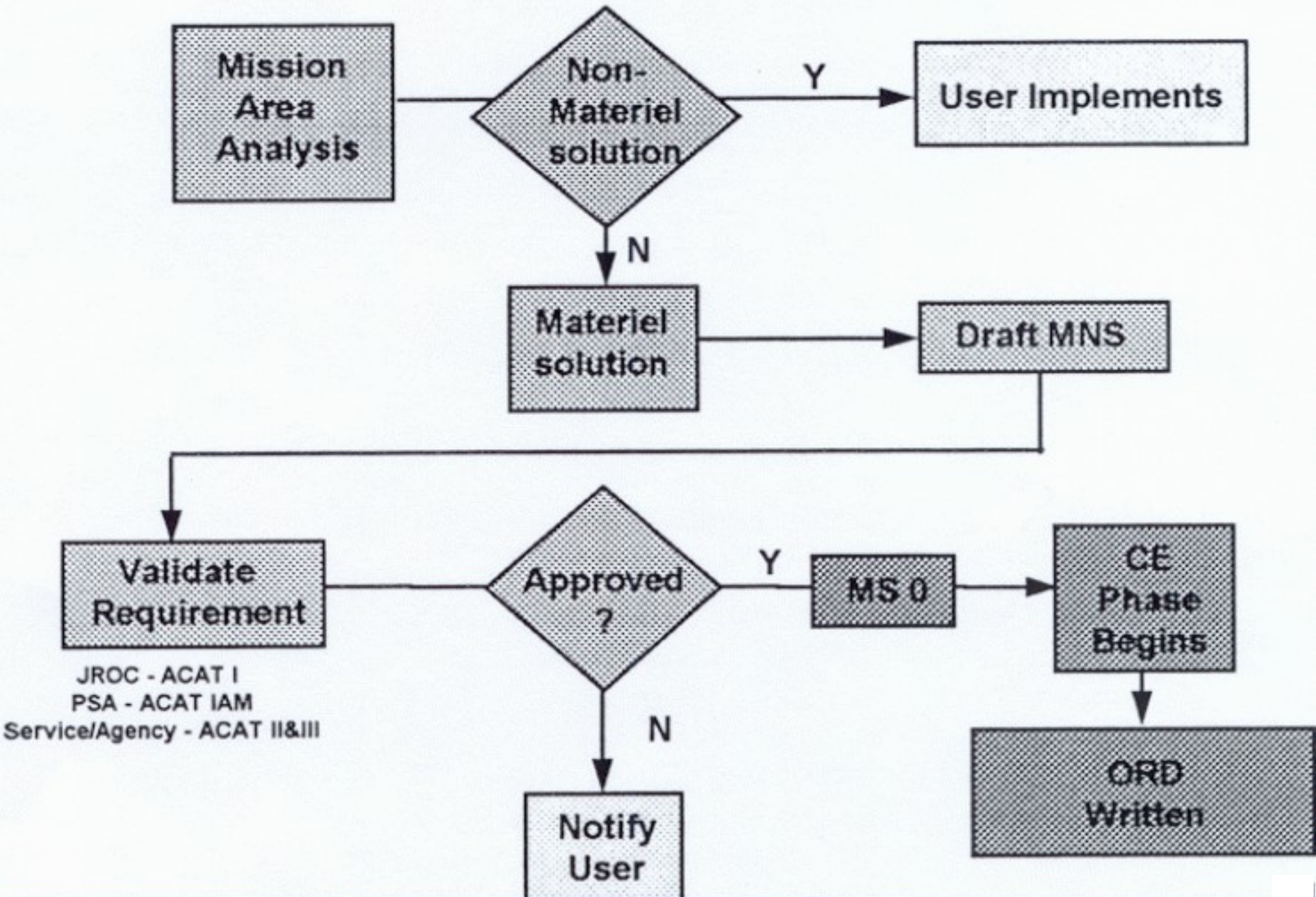   - *updated at each M/S*

Unless otherwise stated, there are no dollar constraints

Operational Requirements Document (ORD) (contd.)

- **ORD includes description of**
  - *Operational capability*
  - *Threat*
  - *Shortcomings of Existing systems*
  - *Integrated Logistics Support*
  - *Infrastructure Support and Interoperability*
  - *Force Structure*
  - *Schedule*

Requirements Generation Process

```
┌─────────────┐                                          ┌──────────────────┐
│   Mission   │          ◇ Non- ◇              Y         │ User Implements  │
│    Area     │─────────◇ Materiel ◇──────────────────▶ │                  │
│  Analysis   │          ◇ solution ◇                     └──────────────────┘
└─────────────┘               │
                              │ N
                              ▼
                     ┌─────────────┐                      ┌──────────────┐
                     │  Materiel   │─────────────────────▶│  Draft MNS   │
                     │  solution   │                      └──────────────┘
                     └─────────────┘                              │
        ┌────────────────────────────────────────────────────────┘
        │
        ▼
┌─────────────┐                              Y    ┌──────────┐        ┌──────────┐
│  Validate   │          ◇ Approved ◇ ────────────│   MS 0   │───────▶│    CE    │
│ Requirement │─────────◇    ?     ◇              └──────────┘        │  Phase   │
└─────────────┘          ◇         ◇                                  │  Begins  │
                              │                                       └──────────┘
 JROC - ACAT I                │ N                                           │
 PSA - ACAT IAM               ▼                                             ▼
 Service/Agency - ACAT II&III ┌─────────┐                           ┌──────────────┐
                              │ Notify  │                           │     ORD      │
                              │  User   │                           │   Written    │
                              └─────────┘                           └──────────────┘
```

And now..........

- **The ORD is just the requirements in user language describing necessary performance characteristics**
  - *It does not address many design considerations in contractual detail*
- **AFMC challenge is to translate and expand ORD into a format that describes the system in contractual terms ensuring affordability, testability, sustainability, etc.**

User involvement is key to ensuring the translation is accurate!

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Acquisition Requirements Documents

- **System Requirements Document(SRD)**
  - *Translates the ORD into engineering language and specification format*

- **Specifications**
  - *Translates the system requirements document into component engineering characteristics*
    - *allocates requirements to subsystems*
    - *determines test requirements to ensure compliance*

- **Specifications are system related, and may outlive the contract for which it was developed**
  - *If kept current, it will accurately describe what was built*
    - *not what was done*

Statement of Objectives/Work

- **Statement of Objectives: top-level description of what the contractor has to do**

- **Statement of Work (SOW): description of what the contractor will actually do during the contract period of performance**
  - *This is always associated with the contract, not necessarily the system*
  - *Contract Data Requirements List (CDRL): describes form/format/frequency etc. of data deliverables*

SOW describes what the contractor is to do, not what the end-product does or looks like.

What does it mean?

- **Programs need requirements**
- **Requirements can result from**
  - *New/forecasted threat*
  - *technological opportunity*
- **The "Granularity" of the requirements drive contractor risk**
  - *If you cannot define it, industry cannot price it*
- **Each piece of the process must relate to each other**

How to ensure everything is covered

- **Contract Requirements Correlation Matrix**
  - *Started by SPO*
    - *Part of RFP*
  - *Finished by contractors*
    - *Part of Proposal*

This becomes the roadmap for reading the proposal to ensure the requirements are all addressed.

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Summary

- **Requirements definition is the toughest part of acquisition**
  - *fuzzy process with no clear cut end*
- **Requirements definition is the province of the user, the acquisition community, and industry**
  - *everyone has to try to understand the others' perspectives and limitations*
- **Requirements definition is the cornerstone of programs**

Outline

- **Acquisition Environment and Process Overview**
- **Marketers, Business Development, and the Action Officer**
- **Requirements Generation Process**
- **Contracting**
- **Financial Management:**
  - *Cost Estimation*
  - *PPBS/Resource allocation*
  - *Program/Budget Execution*
- **Program Execution**
- **Production & Deployment**
- **System Upgrades/ Modifications**